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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,372	02/23/2005	Yasuhiro Omura	122800	5188
25944	7590	06/28/2007		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER HASAN, MOHAMMED A	
			ART UNIT 2873	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/525,372	Applicant(s) OMURA ET AL.	
	Examiner Mohammed Hasan	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/30/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-121 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 71-115 and 121 is/are allowed.
- 6) ☒ Claim(s) 44,45,51-54,60-63,69,70 and 116-120 is/are rejected.
- 7) ☒ Claim(s) 46-50,55-59 and 64-68 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 44,45,51-54,60-63,69, 70, and 116-120 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyama (6,198,576 B1) in view of Hansen (US 2005/00181164 A1).

Regarding claim 44, Matsuyama discloses (refer to figures 2 and 3) a projection optical system for projecting an image of a first plane onto a second plane comprising: lens having a first plane side optical surface shaped such that for light projected onto the second plane through the boundary lens the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle (as shown in figure 2) within the lens (column 3, lines 50-65).

Matsuyama discloses all of the claimed limitations except a lens having a liquid immersed surface .

However, Hansen discloses a lens having a liquid immersed surface (paragraph 0034 and paragraph 0035).

It would have been obvious to one of ordinary skill in the art at the time invention was made to provide a liquid immersion surface in to the Matsuyama projection exposure device for the purpose of an increasing the numerical aperture of projection system (paragraph 0037).

Regarding claim 45, Matsuyama discloses at least one positive lens having aspherical surface (as shown in figure 2).

Regarding claim 51, Matsuyama discloses discloses, a projection optical system for forming an image of a pattern formed on a mask on a photosensitive substrate set on the second plane (as shown in figure 2).

Regarding claim 52, Matsuyama discloses, an exposing method comprising the steps of illuminating a mask set on the first plane and projecting and exposing a pattern image formed on mask on a photosensitive substrate set on the second plane via projection optical system (as shown in figure 2).

Regarding claim 53, Matsuyama discloses (refer to figures 2 and 3) a projection optical system for projecting an image of a first plane onto a second plane comprising: lens having a first plane side optical surface shaped such that for light projected onto the second plane through the boundary lens the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle (as shown in figure 2) within the lens (column 3, lines 50-65).

Matsuyama discloses all of the claimed limitations except a lens having a liquid immersed surface .

However, Hansen discloses a lens having a liquid immersed surface (paragraph 0034 and paragraph 0035).

It would have been obvious to one of ordinary skill in the art at the time invention was made to provide a liquid immersion surface in to the Matsuyama projection exposure device for the purpose of an increasing the numerical aperature of projection system (paragraph 0037).

Regarding claim 60, Matsuyama discloses , a projection optical system for forming an image of a pattern formed on a mask on a photosensitive substrate set on the second plane (as shown in figure 2).

Regarding claim 61, Matsuyama discloses , an exposing method comprising the steps of illuminating a mask set on the first plane and projecting and exposing a pattern image formed on mask on a photosensitive substrate set on the second plane via projection optical system (as shown in figure 2).

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Regarding claim 62, Matsuyama discloses (refer to figures 2 and 3) a projection optical system for projecting an image of a first plane onto a second plane comprising: lens having a first plane side optical surface shaped such that for light projected onto the second plane through the boundary lens the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle (as shown in figure 2) within the lens (column 3, lines 50-65).

Matsuyama discloses all of the claimed limitations except a lens having a liquid immersed surface .

However, Hansen discloses a lens having a liquid immersed surface (paragraph 0034 and paragraph 0035).

It would have been obvious to one of ordinary skill in the art at the time invention was made to provide a liquid immersion surface in to the Matsuyama projection exposure device for the purpose of an increasing the numerical aperture of projection system (paragraph 0037).

Regarding claim 63, Matsuyama discloses discloses, at least one positive lens (305) having aspherical surface (as shown in figure 2).

Regarding claim 69, Matsuyama discloses discloses, a projection optical system for forming an image of a pattern formed on a mask on a photosensitive substrate (S) set on the second plane (as shown in figure 2).

Regarding claim 70, Matsuyama discloses , an exposing method comprising the steps of illuminating a mask set on the first plane and projecting and exposing a pattern

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image formed on mask on a photosensitive substrate set on the second plane via projection optical system (as shown in figure 2).

Regarding claim 116, Matsuyama discloses , a device manufacturing method comprising the steps of: preparing a predetermined pattern, transferring an image of the pattern onto a photosensitive substrate (S) with a projection optical system and developing the photosensitive substrate (as shown in figure 2).

Regarding claim 117, Matsuyama discloses , a device manufacturing method comprising the steps of: preparing a predetermined pattern, transferring an image of the pattern onto a photosensitive substrate (S) with a projection optical system and developing the photosensitive substrate (as shown in figure 2).

Regarding claim 118, Matsuyama discloses , a device manufacturing method comprising the steps of: preparing a predetermined pattern, transferring an image of the pattern onto a photosensitive substrate with a projection optical system and developing the photosensitive substrate (as shown in figure 2).

Regarding claim 119, Hanses discloses , wherein the medium includes a liquid (paragraph 0034 and paragraph 0035).

Regarding claim 120, Matsuyama discloses , a device manufacturing method comprising the steps of: preparing a predetermined pattern, transferring an image of the pattern onto a photosensitive substrate with a projection optical system and developing the photosensitive substrate (as shown in figure 2).

Allowable Subject Matter

2. Claims 71-115, and 121 are allowed.
3. The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in a combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims 71 and 94, for example, which include an optical path having a plurality of lenses including a boundary lens which is closest to the second plane and the first plane side surface has a positive refractive power and an optical path for an atmosphere having refractive index of 1 and the optical path between the boundary lens and second plane is filled with medium having refractive index is larger than 1.1.
4. Claims 46-50,55-59, and 64-68 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show, a first positive powered lens element proximal to the boundary lens having at least one aspheric optical surface and a second positive power lens between the first positive powered lens element and boundary lens having at least one aspheric optical surface and a double-Gauss anastigmat arranged to reduce

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spherical aberration including a third positive powered lens element, a first negative powered lens element, a second negative powered lens element and a fourth positive powered lens element.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art Matsuyama (5,852,490) discloses a projection exposure method and apparatus.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky L Mack can be reached on (571) 272- 2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MH
June 24, 2007

M. Hasan
Mohammed Hasan
Examiner, AU-2873